

# I-39 Dynamic Message Sign Project Summary

## EXECUTIVE SUMMARY

The Illinois Department of Transportation (IDOT) sought to deploy a message sign system consisting of permanently-mounted dynamic message signs around the Rockford metropolitan area. The project goal was to begin building a system of remotely-activated message signs for incident management along the US 20 / I-39 corridor. The funding which was secured for this initiative included \$260,000 Federal FY01 ITS funding with an equal State match. In addition, \$500,000 was available from a State of Illinois Special Information Technology fund.

This first project included the procurement and installation of 4 walk-in message signs, structural supports, and software required for their operation. IDOT began their project in September, 2001, with the selection of a consultant to assist in planning and executing this ITS initiative. The consultant was responsible for preparing contract plans and special provisions to get the contract ready for soliciting bids. On March 6, 2003, IDOT executed a construction contract through competitive bidding to procure, install, and start-up four message signs. The total bid cost was \$936,230.

After construction, testing, and manufacturer's training, the system was commissioned in October, 2004. The total program, beginning with selecting the consultant and ending with system final acceptance, took 37 months.

## BACKGROUND

At the time of the project inception, IDOT consisted of nine districts. District Two (D2) was responsible for the twelve counties in northwest Illinois, including Rockford, the Quad City Area, and DeKalb. Most Dynamic Message Sign experience in the Department was through implementation of several systems in the Chicago metropolitan area. The Illinois Tollway Authority also had several systems in place.

The District Two personnel had some experience with message signs through a project administered by Iowa DOT for several signs on both sides of the Mississippi River, near Moline and Davenport. By formal agreement, D2 personnel are responsible for routine maintenance and participate in the operation of the three signs in Illinois. Also, some construction projects have included the use of temporary portable message signs to assist with moving construction traffic. The District owns ten trailer-mounted / portable signs to utilize for emergencies or uniquely high traffic events.

During the planning for this project, pavement failures were occurring monthly on I-39. Many of these failures required emergency detouring of the interstate traffic. This four-sign system could provide a more effective step toward the safe re-routing of traffic in emergency situations.

## **PROJECT OVERVIEW**

The District sought funding through the IDOT ITS Program office. These funds provided for the construction of the dynamic sign system. Although the construction contract was executed in March 2003, the contractor did not obtain D2 IDOT approval to order the US Traffic signs until November 14, 2003. The sign supports were installed in the fall of 2003. A US Traffic factory visit was provided in March, 2004, to allow the customer to witness factory demonstration testing. The US Traffic signs were delivered within two weeks. Following installation, field testing procedures were conducted. In late April, 2004, formal classroom training was conducted at the D2 IDOT Office. The 90-day proof period began on May 19, 2004. Final Acceptance was issued on October, 13, 2004.

In the five months since their acceptance, the signs have been used for three general purposes: Incident Management, Amber Alerts, and Motorist Advisories. The incident management function includes emergency directions to detour traffic in response to fatal crashes. This function is expected to be used on average, twice per year. The Amber Alert function is anticipated to average 24 times per year. The Motorist Advisories are typically provided at the request of the Illinois State Police. All display functions of these signs are manually programmed from a remote sight.

## **PROJECT CHALLENGES**

### **Inexperience**

Because the four key participants in the project initiation left IDOT employment just before the project was bid, nearly all insight into planning and design details was lost. The specifications for this project were very tightly based upon an older version of a specific brand of walk-in cabinet. The contractor proposed using an alternate brand, US Traffic. Due to inexperience at D2 IDOT, it was difficult to determine which aspects of the proposed product would fulfill the contract requirements. The most beneficial factor in determining acceptance of the manufacturer was the discussion with past customers. The contract required a minimum of 50 signs of the desired type to have been installed prior to the bids for this project. Also, the vendor was to provide a list of previous installations and the customer names. The IDOT ITS Office personnel were instrumental in moving this contract forward. They provided objective evaluations of the equipment and participated in the factory demonstration testing.

### **Design Flaws**

The construction plans did not present engineering solutions related to the available soil boring data. It was discovered during construction that one of the four signs was located in a swampy area which was completely unsuitable for the construction of the sign foundations. Also, the contract plans did not provide for rock excavation at two other sign locations. The rock excavation caused both delays in progress and extra costs. Several items in the specifications were based upon previous contracts, with little attention given to newly developed technology. Those requirements which were performance-based proved more beneficial.

## **LESSONS LEARNED**

Although the Measures of Effectiveness are not quantifiable for this project, the dynamic message signs do play an important role in safe transportation on this section of interstate highway with ADT's over 30,000. The following items do stand out as key elements in the success of future ITS projects:

1. Performance-based specifications proved to be more helpful than design specifications, due to rapidly changing technology in this field.
2. Requirements for in-field orientation and a minimum of 40 hours of classroom training were very effective in system startup and establishing roles for operation and maintenance of this system.
3. The development of an approved vendors list will facilitate equipment approval and lead toward more rapid procurement.
4. Plans must be checked by structural personnel to assure that adequate design considerations have been completed.